



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2021-0835; Project Identifier AD-2021-00971-E]

RIN 2120-AA64

Airworthiness Directives; International Aero Engines AG Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The FAA proposes to supersede Airworthiness Directive (AD) 2021-11-15, which applies to certain International Aero Engines AG (IAE) V2500 model turbofan engines. AD 2021-11-15 requires performance of an ultrasonic inspection (USI) of the high-pressure turbine (HPT) 1st-stage disk and HPT 2nd-stage disk and, depending on the results of the inspections, replacement of the HPT 1st-stage disk or HPT 2nd-stage disk. Since the FAA issued AD 2021-11-15, the FAA determined the need to clarify the compliance time for inspection of any HPT 1st-stage disk or HPT 2nd-stage disk that is installed on a low-thrust model engine but had been previously operated on a high-thrust model engine. This proposed AD would require performance of a USI of the HPT 1st-stage disk and HPT 2nd-stage disk and, depending on the results of the inspections, replacement of the HPT 1st-stage disk or HPT 2nd-stage disk. The FAA is proposing this AD to address the unsafe condition on these products.

DATES: The FAA must receive comments on this proposed AD by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <https://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: (202) 493-2251.

- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

- Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this NPRM, contact International Aero Engines AG, 400 Main Street, East Hartford, CT 06118; phone: (800) 565-0140; email: help24@prattwhitney.com; website: <https://connect.prattwhitney.com>. You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (781) 238-7759.

Examining the AD Docket

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0835; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this NPRM, any comments received, and other information. The street address for Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Alberto Hernandez, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7329; fax: (781) 238-7199; email: Alberto.J.Hernandez@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA invites you to send any written relevant data, views, or arguments about this proposal. Send your comments to an address listed under ADDRESSES. Include “Docket No. FAA-2021-0835; Project Identifier AD-2021-00971-E” at the beginning of your comments. The most helpful comments reference a specific portion of the proposal, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend the proposal because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to <https://www.regulations.gov>, including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this NPRM contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this NPRM, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as “PROPIN.” The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this NPRM. Submissions containing CBI should be sent to Alberto Hernandez, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803. Any commentary that the FAA receives which is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Background

The FAA issued AD 2021-11-15, Amendment 39-21577 (86 FR 30380, June 8, 2021), (AD 2021-11-15), for all IAE V2522-A5, V2524-A5, V2525-D5, V2527-A5, V2527E-A5, V2527M-A5, V2528-D5, V2530-A5, V2531-E5, and V2533-A5 model turbofan engines with a certain HPT 1st-stage disk or HPT 2nd-stage disk installed. AD 2021-11-15 was prompted by an event involving an uncontained failure of an HPT 1st-stage disk that resulted in high-energy debris penetrating the engine cowling. On March 18, 2020, an Airbus Model A321-231 airplane, powered by IAE V2533-A5 model turbofan engines, experienced an uncontained HPT 1st-stage disk failure that resulted in an aborted takeoff. The uncontained failure of the HPT 1st-stage disk resulted in high-energy debris penetrating the engine cowling. The FAA published Emergency AD 2020-07-51 on March 21, 2020 (followed by publication in the *Federal Register* on April 13,

2020, as a Final Rule, Request for Comments (85 FR 20402)) and AD 2021-01-03 on January 6, 2021 (86 FR 458), to remove from service HPT 1st-stage and HPT 2nd-stage disks identified as having the highest risk of failure. Based on the root cause analysis performed since that event, the manufacturer identified a population of HPT 1st-stage disks and HPT 2nd-stage disks that require inspection and possible removal from service. AD 2021-11-15 requires the performance of an USI of the HPT 1st-stage disk and HPT 2nd-stage disk and, depending on the results of the inspections, replacement of the HPT 1st-stage disk or HPT 2nd-stage disk. The agency issued AD 2021-11-15 to prevent failure of the HPT 1st-stage disk and HPT 2nd-stage disk.

Actions Since AD 2021-11-15 Was Issued

Since the FAA issued AD 2021-11-15, the FAA determined the need to clarify the compliance time for inspection of any HPT 1st-stage disk or HPT 2nd-stage disk that is installed on a V2500 low-thrust model engine but that had been previously operated on a V2500 high-thrust model engine. The manufacturer categorizes V2527E-A5, V2527M-A5, V2528-D5, V2530-A5, and V2533-A5 model turbofan engines as high-thrust model engines and V2522-A5, V2524-A5, V2525-D5, and V2527-A model turbofan engines as low-thrust model engines. The FAA determined that any HPT 1st-stage disk and HPT 2nd-stage disk that was operated on a high-thrust model engine must follow shortened compliance thresholds.

FAA's Determination

The FAA is issuing this NPRM after determining that the unsafe condition described previously is likely to exist or develop on other products of the same type design.

Related Service Information under 1 CFR Part 51

The FAA reviewed IAE Non-Modification Service Bulletin (NMSB) No. V2500-ENG-72-0713, Revision 1, dated January 26, 2021. This NMSB identifies the affected HPT 1st-stage disks and HPT 2nd-stage disks on IAE V2522-A5, V2524-A5, V2525-D5, V2527-A5, V2527E-A5, V2527M-A5, V2528-D5, V2530-A5, and V2533-A5 model turbofan engines and specifies procedures for a USI of the HPT 1st-stage disk and HPT 2nd-stage disk. The Director of the Federal Register approved IAE NMSB V2500-ENG-

72-0713, Revision 1, dated January 26, 2021 for incorporation by reference as of July 13, 2021 (86 FR 30380, June 8, 2021).

The FAA also reviewed IAE NMSB No. V2500-E5-72-0015, Revision 1, dated August 10, 2021. This NMSB identifies the affected HPT 1st-stage disks and HPT 2nd-stage disks on IAE V2531-E5 model turbofan engines and specifies procedures for a USI of the HPT 1st-stage disk and HPT 2nd-stage disk.

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

Proposed AD Requirements in this NPRM

This proposed AD would retain certain requirements of AD 2021-11-15. This proposed AD would require the performance of an USI of the HPT 1st-stage disk and HPT 2nd-stage disk and, depending on the results of the inspections, replacement of the HPT 1st-stage disk or HPT 2nd-stage disk.

Costs of Compliance

The FAA estimates that this AD, if adopted as proposed, would affect 1,100 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this proposed AD:

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
USI the HPT 1st-stage disk and HPT 2nd-stage disk	20 work-hours x \$85 per hour = \$1,700	\$0	\$1,700	\$1,870,000

The FAA estimates the following costs to do any necessary replacement that would be required based on the results of the proposed inspection. The agency has no way of determining the number of aircraft that might need this replacement:

On-condition costs

Action	Labor Cost	Parts Cost	Cost per product
Replace the HPT 1st-stage disk or	0 work-hours x \$85 per hour = \$0	\$300,000	\$300,000

HPT 2nd-stage disk			
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The FAA has included all known costs in its cost estimate. According to the manufacturer, however, some of the costs of this proposed AD may be covered under warranty, thereby reducing the cost impact on affected individuals.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA’s authority to issue rules on aviation safety. Subtitle I, Section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency’s authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701, General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

The FAA determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that the proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Would not affect intrastate aviation in Alaska, and
- (3) Would not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by:

a. Removing Airworthiness Directive AD 2021-11-15, Amendment 39-21577 (86 FR 30380, June 8, 2021); and

b. Adding the following new airworthiness directive:

International Aero Engines AG: Docket No. FAA-2021-0835; Project Identifier AD-2021-00971-E.

(a) Comments Due Date

The FAA must receive comments on this airworthiness directive (AD) action by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

This AD replaces AD 2021-11-15, Amendment 39-21577 (86 FR 30380, June 8, 2021) (AD 2021-11-15).

(c) Applicability

This AD applies to International Aero Engines AG (IAE) V2522-A5, V2524-A5, V2525-D5, V2527-A5, V2527E-A5, V2527M-A5, V2528-D5, V2530-A5, V2531-E5, and V2533-A5 model turbofan engines with an installed:

(1) High-pressure turbine (HPT) 1st-stage disk, part number (P/N) 2A5001, with a serial number (S/N) listed in Appendix A, Table 1, of IAE Non-Modification Service Bulletin (NMSB) No. V2500-ENG-72-0713, Revision 1, dated January 26, 2021 (IAE NMSB V2500-ENG-72-0713, Revision 1) or IAE NMSB No. V2500-E5-72-0015, Revision 1, dated August 10, 2021 (IAE NMSB V2500-E5-72-0015, Revision 1); or

(2) HPT 2nd-stage disk, P/N 2A4802, with an S/N listed in Appendix A, Table 2, of IAE NMSB V2500-ENG-72-0713, Revision 1, or IAE NMSB V2500-E5-72-0015, Revision 1.

(d) Subject

Joint Aircraft System Component (JASC) Code 7250, Turbine Section.

(e) Unsafe Condition

This AD was prompted by an analysis performed by the manufacturer after an event involving an uncontained failure of a HPT 1st-stage disk that resulted in high-energy debris penetrating the engine cowling. The FAA is issuing this AD to prevent failure of the HPT 1st-stage disk and HPT 2nd-stage disk. The unsafe condition, if not addressed, could result in uncontained HPT disk failure, damage to the engine, damage to the airplane, and loss of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Required Actions

(1) For IAE V2527E-A5, V2527M-A5, V2528-D5, V2530-A5, and V2533-A5 model turbofan engines with an HPT 1st-stage disk, P/N 2A5001, with an S/N listed in Appendix A, Table 1, of IAE NMSB V2500-ENG-72-0713, Revision 1, within the compliance time specified in Figure 1 to paragraph (g)(1) of this AD, or within 10 flight cycles (FCs) after the effective date of this AD, whichever occurs later, perform an ultrasonic inspection (USI) of the HPT 1st-stage disk using the Accomplishment Instructions, paragraph 6, of IAE NMSB V2500-ENG-72-0713, Revision 1.

Figure 1 to Paragraph (g)(1) – Inspection threshold

Compliance time: Whichever occurs first, Row A or B	
A	At the next engine shop visit after July 13, 2021 (the effective date of AD 2021-11-15)
B	Before the HPT 1st-stage disk or HPT 2nd-stage disk has accumulated 3,200 flight cycles (FCs) since July 13, 2021

Note 1 to paragraph (g)(1): The USI required by paragraphs (g)(1) through (6) of this AD requires the HPT 1st-stage disk and HPT 2nd-stage disks to be removed from the

engine allowing piece-part opportunity inspections. Per the Airworthiness Limitations Section of the manufacturer's Instructions for Continued Airworthiness, the additional inspections are not required unless the part has more than 100 FCs since the last piece-part opportunity inspection, is damaged, or is the cause for the removal of the engine. Engine removal for the purposes of complying with this AD is not “cause” for removal as stated in the Airworthiness Limitations Section.

(2) For IAE V2527E-A5, V2527M-A5, V2528-D5, V2530-A5, and V2533-A5 model turbofan engines with an HPT 2nd-stage disk, P/N 2A4802, with an S/N listed in Appendix A, Table 2, of IAE NMSB V2500-ENG-72-0713, Revision 1, within the compliance time specified in Figure 1 to paragraph (g)(1) of this AD, or within 10 FCs after the effective date of this AD, whichever occurs later, perform a USI of the HPT 2nd-stage disk using the Accomplishment Instructions, paragraph 7, of IAE NMSB V2500-ENG-72-0713, Revision 1.

(3) For IAE V2522-A5, V2524-A5, V2525-D5, and V2527-A5 model turbofan engines with an HPT 1st-stage disk, P/N 2A5001, with an S/N listed in Appendix A, Table 1, of IAE NMSB V2500-ENG-72-0713, Revision 1, within the following compliance times, perform a USI of the HPT 1st-stage disk using the Accomplishment Instructions, paragraph 6, of IAE NMSB V2500-ENG-72-0713, Revision 1:

(i) If the affected HPT 1st-stage disk has not operated at any time in an IAE V2527E-A5, V2527M-A5, V2528-D5, V2530-A5, or V2533-A5 model turbofan engine, perform the inspection within the compliance time specified in Figure 2 to paragraph (g)(3)(i) of this AD, or within 10 FCs after the effective date of this AD, whichever occurs later; or

Figure 2 to Paragraph (g)(3)(i) – Inspection threshold

Compliance time: Whichever occurs first, Row A or B	
A	At the next HPT rotor and stator assembly (HPT module) removal after July 13, 2021 (the effective date of AD 2021-11-15)
B	Before the HPT 1st-stage disk or HPT 2nd-stage disk has accumulated 6,700 FCs since July 13, 2021

(ii) If the affected HPT 1st-stage disk has operated at any time in an IAE V2527E-A5, V2527M-A5, V2528-D5, V2530-A5, or V2533-A5 model turbofan engine, perform the inspection within the compliance time specified in Figure 1 to paragraph (g)(1) of this AD, or within 10 FCs after the effective date of this AD, whichever occurs later.

(4) For IAE V2522-A5, V2524-A5, V2525-D5, and V2527-A5 model turbofan engines with an HPT 2nd-stage disk, P/N 2A4802, with an S/N listed in Appendix A, Table 2, of IAE NMSB V2500-ENG-72-0713, Revision 1, within the following compliance times, perform a USI of the HPT 2nd-stage disk using the Accomplishment Instructions, paragraph 7, of IAE NMSB V2500-ENG-72-0713, Revision 1:

(i) If the affected HPT 2nd-stage disk has not operated at any time in an IAE V2527E-A5, V2527M-A5, V2528-D5, V2530-A5, or V2533-A5 model turbofan engine, perform the inspection within the compliance time specified in Figure 2 to paragraph (g)(3)(i) of this AD, or within 10 FCs after the effective date of this AD, whichever occurs later; or

(ii) If the affected HPT 2nd-stage disk has operated at any time in an IAE V2527E-A5, V2527M-A5, V2528-D5, V2530-A5, or V2533-A5 model turbofan engine, perform the inspection within the compliance time specified in Figure 1 to paragraph (g)(1) of this AD, or within 10 FCs after the effective date of this AD, whichever occurs later.

(5) For IAE V2531-E5 model turbofan engines with an HPT 1st-stage disk, P/N 2A5001, with an S/N listed in Appendix A, Table 1, of IAE NMSB V2500-E5-72-0015, Revision 1, within the compliance time specified in Figure 1 to paragraph (g)(1) of this AD, or within 10 FCs after the effective date of this AD, whichever occurs later, perform a USI of the HPT 1st-stage disk using the Accomplishment Instructions, paragraph 6, of IAE NMSB V2500-E5-72-0015, Revision 1.

(6) For IAE V2531-E5 model turbofan engines with an HPT 2nd-stage disk, P/N 2A4802, with an S/N listed in Appendix A, Table 2, of IAE NMSB V2500-E5-72-0015, Revision 1, within the compliance time specified in Figure 1 to paragraph (g)(1) of this AD, or within 10 FCs after the effective date of this AD, whichever occurs later, perform

a USI of the HPT 2nd-stage disk using the Accomplishment Instructions, paragraph 7, of IAE NMSB V2500-E5-72-0015, Revision 1.

(7) If, during the USI required by paragraphs (g)(1) through (6) of this AD, an HPT 1st-stage disk or HPT 2nd-stage disk does not pass the inspection as specified in the Accomplishment Instructions, paragraph 8., of IAE NMSB V2500-ENG-72-0713, Revision 1, or IAE NMSB V2500-E5-72-0015, Revision 1, as applicable, before further flight, remove the HPT 1st-stage disk or 2nd-stage disk, as applicable, from service and replace with a part eligible for installation.

(h) Definitions

(1) For the purpose of this AD, an “engine shop visit” is the induction of an engine into the shop for maintenance involving the separation of pairs of major mating engine flanges, H-P, except for the following situations, which do not constitute an engine shop visit.

(i) Separation of engine flanges solely for the purposes of transportation without subsequent engine maintenance.

(ii) Engine removal for the purpose of performing field maintenance activities at a maintenance facility in lieu of performing them on-wing.

(2) For the purpose for this AD, a “part eligible for installation” is:

(i) An HPT 1st-stage disk or HPT 2nd-stage disk listed in Appendix A, Tables 1 and 2, of IAE NMSB V2500-ENG-72-0713, Revision 1, or Appendix A, Tables 1 and 2, of IAE NMSB V2500-E5-72-0015, Revision 1, that passed the USI required by paragraphs (g)(1) through (6) of this AD; or

(ii) An HPT 1st-stage disk or HPT 2nd-stage disk that is not listed in Appendix A, Tables 1 and 2, of IAE NMSB V2500-ENG-72-0713, Revision 1, or Appendix A, Tables 1 and 2, of IAE NMSB V2500-E5-72-0015, Revision 1.

(i) Credit for Previous Actions

You may take credit for the USI of the HPT 1st-stage disk and HPT 2nd-stage disk required by paragraphs (g)(5) and (6) of this AD and the replacement of the HPT 1st-stage disk and HPT 2nd-stage disk required by paragraph (g)(7) of this AD, if you

performed these actions before the effective date of this AD in accordance with IAE NMSB No. V2500-E5-72-0015, original issue, dated December 15, 2020.

(j) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (k)(1) of this AD. You may email your request to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(k) Related Information

(1) For more information about this AD, contact Alberto Hernandez, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7329; fax: (781) 238-7199; email: Alberto.J.Hernandez@faa.gov.

(2) For service information identified in this AD, contact International Aero Engines AG, 400 Main Street, East Hartford, CT 06118; phone: (800) 565-0140; email: help24@prattwhitney.com; website: <https://connect.p PrattWhitney.com>. You may view this referenced service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (781) 238-7759.

Issued on September 23, 2021.

Gaetano A. Sciortino, Deputy Director for Strategic Initiatives,
Compliance & Airworthiness Division,
Aircraft Certification Service.